WHAT IS CLAIMED IS:

1. A method for monitoring surface parameters comprising collecting spectral measurements in two spectral bands;

applying ratioing techniques to remove the effect of sun elevation and cloud cover variations;

calibrating the resulting values to known values; and monitoring the surface parameters of interest.

2. The method according to claim 1 wherein the surface parameters are selected from the group consisting of vegetation cover, vegetation density, and combinations thereof.

3. The method according to claim 1 wherein the surface parameters are selected from the group consisting of suspended sediment concentration in water, turbidity in water, and combinations thereof.

4. The method according to claim 1 wherein the spectral bands measurements for the two immediate applications are visible red and near-infrared.

5. The method according to claim 1 wherein the ratioing techniques comprising the following formula:

Radiance (red) = Reflectance (red) * Eo (red)

Radiance (nir) = Reflectance (nir) * Eo (nir)

wherein Eo is the total solar irradiance in a given spectral band is used in place of spectral reflectances.

6. The method according to claim 1 wherein the spectral measurements are collected at time intervals ranging from about 15 minutes to two weeks during daylight.

7. A method for monitoring surface parameters comprising collecting as plurality of spectral measurements in two spectral bands using a plurality of one to several radiometers covering different portions of the spectrum;

applying ratioing techniques to remove the effect of sun elevation and cloud cover variations;

calibrating the resulting values to known values; and

monitoring the surface parameters of interest.

8. The method according to claim 7 wherein the surface parameters are selected from the group consisting of vegetation cover, vegetation density, and combinations thereof.

9. The method according to claim 7 wherein the surface parameters are selected from the group consisting of suspended sediment concentration in water, turbidity in water, and combinations thereof.

10. The method according to claim 7 wherein the spectral bands for the two immediate applications are visible red and near-infrared.

11. The method according to claim 7 wherein the ratioing techniques comprising the following formula:

Radiance (red) = Reflectance (red) * Eo (red)

Radiance (nir) = Reflectance (nir) * Eo (nir)

wherein Eo is the total solar irradiance in a given spectral band is used in place of spectral reflectances.

12. The method according to claim 7 wherein the spectral measurements are collected at time intervals ranging from about 15 minutes to two weeks during daylight.